Surgical site infection (SSI) is a serious complication of joint replacement surgery. Inadvertent perioperative hypothermia is a risk factor for SSI. There is some evidence that Forced Air Warming (FAW) to maintain normothermia may negate the protective effects of laminar airflow ventilation. Resistive Fabric Warming (RFW) does not interfere with laminar flow. A randomised trial to compare SSI rates following warming with FAW or RFW would require approximately 10,000 participants. We have conducted a pilot study in the first instance to confirm recruitment capacity.

In a parallel group, open label trial, adults undergoing hemiarthroplasty following hip fracture were randomised to either FAW or RFW. Hypothermia at the end of surgery was defined as <36°C. Participants were followed up at three months for deep SSIs as determined by an independent, blinded endpoint committee. Secondary endpoints included superficial SSIs and serious adverse events.

515 participants were recruited. No unexpected and related serious adverse events were reported and there was no difference in the mean temperature before anaesthesia, during surgery, at the end of surgery or upon arrival in the recovery room. Deep SSIs were confirmed in both arms. The overall incidence of deep SSI was 1.6% which was lower than previously reported.

The pilot study demonstrated robust recruitment and data management strategies and shown that FAW and RFW were both safe to use and effective at maintaining normothermia. There was insufficient power in the pilot study to compare the number of infections. Funding for a full trial is now sought.
Resistive fabric warming as a viable alternative to forced air warming for maintaining normothermia to prevent surgical site infection

Michelle Kümín1, Chris Jones2, Alex Woods3, Stephen Bremner2, Mike Reed4, Matthew Scarborough5, Christopher Mark Harper2,6

1Nuffield Department of Medicine, University of Oxford, Oxford
2Brighton and Sussex University Hospitals NHS Trust, Brighton
3Milton Keynes University Hospitals NHS Foundation Trust, Milton Keynes
4Northumbria Healthcare NHS Foundation Trust, North Shields
5Oxford University Hospitals NHS Foundation Trust, Oxford
6Brighton and Sussex Medical School, Brighton

Abstract

Inadvertent perioperative hypothermia can have severe consequences. Active warming to maintain normothermia can help to prevent surgical site infection. However, core temperature measurement during anaesthesia is not standardised and the best warming method to use during orthopaedic surgery is debatable. The primary objective of this analysis was to compare temperatures during surgery between two types of patient warming.

Temperature readings measured using zero-flux thermometry were compared in participants recruited to a randomised pilot study comparing post-operative infection rates using Forced Air Warming (FAW) or Resistive Fabric Warming (RFW). Temperatures were taken after induction of anaesthesia and at 5-minute intervals during surgery. The groups were compared using regression models with fixed effects for trial group and covariates related to temperature.

There was no evidence of a difference in the proportion of hypothermic patients during surgery or at the end of surgery, whether hypothermia was defined as <36.5°C or <36.0°C, and there was no evidence of a difference in time from surgery to discharge, between the RFW and FAW groups; the overall median time to discharge was 14 days in both groups. Those in the RFW group were -0.08°C (95% CI: -0.15 to -0.01) cooler than those in the FAW group and had a cumulative hypothermia score -1.87 lower than the FAW group (95% CI: -3.31 to -0.42; P=0.012). The implication of these differences is uncertain but that may not be clinically important.

This comparison has shown that FAW and RFW are similarly effective in preventing inadvertent perioperative hypothermia.
Abstract

Preventing inadvertent perioperative hypothermia (IPH) during surgery decreases rates of wound infection, cardiovascular events, perioperative pain, bleeding, duration of surgery and total duration of hospital stay. The aim of this survey was to see if there is a user preference.

Staff involved in the RIIiO trial were asked about the using Forced Air Warming (FAW) and Resistive Fabric Warming (RFW). All 16 respondents (7 nurses, 6 ODPs, 2 surgeons, 1 anaesthetist) were experienced FAW users; there was an equal number of experienced and inexperienced RFW users.

No difference was observed in how easy the two technologies are to operate, access to the surgical site or how they adapt to the patient's body shape. FAW was marginally better than RFW for draping over the patient and considerably better for storing when not in use. Few respondents found the heat generated by FAW uncomfortable and none mentioned the noise generated.

The majority of respondents believed that FAW and RFW were equally safe to use and that RFW was more economical in the long term but that FAW was quicker at warming the patient. Almost all of the respondents were confident that cleaning was adequate in terms of infection control for both systems. Nearly half of the respondents had no overall preference; of those that did, FAW was preferred but five out of six were inexperienced RFW users.

User preference appears to be connected to level of experience. Although RFW was thought to be equally safe to use, it was not recommended.
**Title**  The importance of specific timed intervention and involvement of a multi-disciplinary team when treating patients with a prosthetic joint infection

**Author**  Claire McMahon

**Address**  The Royal Orthopaedic Hospital NHS Trust, Birmingham

**Abstract**

**Introduction:** In England and Wales there are approximately 187,000 total hip or knee replacement procedures performed each year. Prosthetic joint infection (PJI) remains one of the most serious complication with between 1-2% of these patients being affected. The authors trust carries out many revision surgeries for prosthetic joint infection each year. This poster will discuss the trust best approach to manage and support these patients.

**Method:** This poster will look at how the author’s trust manages patients through its Bone Infection Service (BIS). An MDT approach is recommended by many authors when diagnosing and treating these patients to give the best outcomes. The poster will identify current MDT roles involved in the BIS, and their contribution to MDT meetings. The role of the BIS nurse is also explored as this role is uncommon within most trusts. Patient management is also discussed following evidence based criteria. Specifically looking at Identification of PJI, timing of intervention, BI MDT discussions, antibiotic management and discharge follow up.

**Results:** The benefits to this MDT approach and specific timed intervention at the described hospital have been associated with positive patient experiences, earlier patient discharge, earlier identification of issues that require re-admission, and improved antimicrobial stewardship.

**Discussion:** The poster will discuss the importance of timed intervention within patient pathway and MDT involvement for patients who are undergoing treatment at named trust for a bone infection.
A 66 year old man with diabetes presented with fever and a swollen, painful native left knee. Inflammatory markers were raised (white cell count 17 x 10^9/L, C-reactive protein 303 mg/L). Both synovial aspirate and blood culture revealed Gram negative bacilli and he was commenced empirically on intravenous cefuroxime. The synovial aspirate grew *Pasteurella multocida*. Surprisingly, the blood culture isolated *Salmonella sp* later identified as *Salmonella enteritidis*. Antibiotics were changed to intravenous amoxicillin to cover both organisms. A week later and following two washout procedures his left leg remained swollen, red and tender. MRI showed osteomyelitis of the distal femur and proximal tibia, a large collection in the quadriceps, multiple fluid collections and abscesses in the lower leg. Samples from incision and drainage of thigh and calf and a third knee washout grew *Pasteurella multocida*. Amoxicillin dose was increased from 1 gram TDS to QDS. Further debridement and washout procedures were needed to control the infection. This is a case of aggressive *Pasteurella* bone and joint infection. It is likely that both *Pasteurella* and *Salmonella* were acquired from contact with his dog who he reported licking an open wound on his foot. Most cases of *Pasteurella* bone or joint infection are due to direct inoculation or contiguous spread from skin infection. Haematogenous spread, as we presume in this case because the site of infection is distant to the site of the animal contact, is less common. Diabetes is a risk factor for both invasive *Salmonella* and *Pasteurella* infection.
Waiting for infected hip revision surgery; exploring patient and families’ experience of waiting

Katy Crick, Swee Hwa Chin, Fiona Fitzgerald, Suzanne Bench

Royal National Orthopaedic Hospital, London

Background: As a tertiary center for complex orthopaedic surgery, evaluating current practice is vital to enhance pathways of care. A vital element of this is to understand service users’ perspectives and experiences, yet little research to date has explored experiences of waiting in this cohort.

Objectives: To understand patients’ and families’ experiences of waiting for hip revision surgery and their perceptions of its impact on their quality of life.

Design and Methodology: A mixed method study collected data via a survey and individual interviews from people with an infected prosthetic joint who were or who had experienced waiting for surgery between 01.05.2018 and 30.04.2019. Of the 54 participants invited to participate, 22 returned a questionnaire and six agreed to be interviewed. Quantitative data were analysed descriptively whilst qualitative data underwent thematic analysis.

Results: Although 67% respondents reported being satisfied with their waiting time, all reported an increase in pain whilst waiting and 60% stated that waiting had a significant effect on their lives and those of their friends/family (85%). Most Respondents reported high levels of satisfaction with the support (89%) and information (83%) provided by the clinical team. Qualitative data are currently undergoing analysis.

Discussion/Conclusion: Despite Satisfaction with support and information being rated highly, waiting for surgery clearly has a great impact on patients and their families. Further understanding of this impact and how it can be mitigated is expected from the qualitative findings.
Assessing the elution kinetics of vancomycin and tobramycin from antibiotic-loaded calcium sulfate, PMMA spacers and powdered antibiotic bolus using a reactor flow system.

Craig Delury¹, Devendra Dusane², Casey Peters², Jack Brooks³, Kelly Moore³, Phillip Laycock¹, Rebecca Wilson-van Os¹, Sean Aiken¹, Anne Sullivan³, Jeffrey Granger³, Paul Stoodley²

¹Biocomposites Ltd, Keele, United Kingdom. ²The Ohio State University, Columbus, Ohio, USA

Abstract

Introduction: Antibiotic tolerant biofilms play an important role in the pathogenicity of chronic periprosthetic joint infection (PJI). Antibiotic-loaded calcium sulfate (ALCS*, Stimulan Rapid Cure) has shown promising results for eradication of these biofilms in-vitro. Antibiotic-loaded PMMA bone cement (AL-PMMA) and powdered antibiotic sprinkled in the surgical site (PAB) are additional strategies used to achieve high local concentrations of antibiotics. Here we describe an in-vitro flow reactor model, to better determine the predicted antibiotic concentration profile from these release strategies.

Methods: A reactor flow system was used to pump solution simulating post-surgical drainage. The flow rate was adapted to align with clinical values. ALCS beads were loaded with vancomycin (VAN) at 1000mg and 240mg tobramycin (TOB) per 10cc/pack. PMMA spacers were unloaded or mixed with 2000mg VAN and TOB. PAB was performed using 1000mg of VAN directly added to the reactor. Effluent was collected, and VAN/TOB concentrations were semi-quantitatively assessed using zone of inhibition (ZOI) testing.

Results: ZOI analysis showed an increased killing of S. aureus and P. aeruginosa and longer elution by ALCS compared with AL-PMMA and PAB. Additionally, ZOI testing showed increased killing with ALCS in combination with AL-PMMA than with AL-PMMA alone. With PAB, the VAN concentration dropped rapidly within 24-48 hours suggesting washout of the antibiotic.

Discussion: Based on these in-vitro results, it is evident that ALCS beads loaded with VAN/TOB provide an extended release at above inhibitory concentrations for longer than a single bolus delivery and also provide an attenuated effect when used in combination with AL-PMMA.
Title: Osteomyelitis in diabetic foot: radical approach vs conservative treatment

Authors: Sokol Hasho¹, Eni Celo²

Addresses: ¹Shefqet Ndroqi University Hospital, Tirana, Albania. ²Trauma University Hospital, Tirana, Albania

Abstract

**Aim:** To evaluate the role of sequestrectomy as a better solution compared to long term conservative treatment in diabetic patients.

**Method:** We performed 52 consecutive sequestrectomies in 51 diabetic patients with bone involvement demonstrated by a positive probe to bone and a positive rx. For each patient the part of bone resected resulted with abnormal consistence and was collected in a sample. In our study there were 83% males and 14% females. Mean age was 68±8 years old. Mean HbA1c values 8.7±2.4%.

**Results /Discussion:** In our study 37 patients (72%) resulted with peripheral vascular disease, while 15 patients (28%) had no arterial problems. In the histological examination 48/52 patients (92%) resulted positive for osteomyelitis (presented acute inflammation, micro-abscesses, necrosis of trabecolae). In 4/52 patients (8%) resulted absence of osteomyelitis (presence of fibro productive process without infection). There were isolated a total of 54 strains. Among them 10 alert pathogens were identified (1 MRSA, 2 MRSCN, 1 Escherichia coli ESBL, 1 Klebsiella pneumoniae ESBL, 1 Pseudomonas aeruginosa ESBL, 2 VRE, 1 Acinetobacter lwofii MDR and 1 Acinetobacter calcoaceticus-baumanii complex MDR). Twenty-two patients presented complete healing of the wound with a mean healing time of 85 ± 38 days. Antibiotic therapy was given orally for a mean duration of 21±10 days. No relapse of wounds or osteomyelitis was observed at the site of previous lesions in the follow up of 6 months.

**Conclusion:** Limited removal of infected bone is associated with a high percentage of success in healing osteomyelitis with a very low relapse rate.
Title  A comparison of enrichment culture media for the diagnosis of peri-prosthetic joint infection

Authors  Graham Harvey\textsuperscript{1,2}, Karen Gibson\textsuperscript{1}

Addresses  \textsuperscript{1}Department of Medical Microbiology, Shrewsbury and Telford Hospital NHS Trust, Shrewsbury. \textsuperscript{2}Robert Jones and Agnes Hunt Orthopaedic Hospital, NHS Foundation Trust, Oswestry

Abstract

Introduction: Various broth enrichment culture media have been advocated for the diagnosis of peri-prosthetic infections. We compared our in house method of enrichment in nutrient broth (NB) with a fastidious anaerobic broth (FAB), Robertson's cooked meat broth (RCM) and a continuous monitoring blood culture system (CMBCS) namely Becton Dickenson Bactec FX.

Methods: Revision arthroplasty samples were collected into vials of nutrient broth and disrupted with Ballotini glass beads. Samples were aliquoted into FAB, RCM and aerobic & anaerobic blood culture bottles. Broths were incubated at 35\textdegree C for a minimum of 5 days and sub-cultured onto blood and chocolate agar for 7 days. Blood culture samples were incubated for 5 days and sub-cultured only if they flagged positive. All isolates were identified by MALDi-ToF.

Results: 78 consecutive arthroplasty samples were included in this study. There was no growth in 53 samples and 7 were false positives. 18 samples were considered to be true positives, these comprised \textit{Staph epidermidis} (10), \textit{Staph aureus} (4), \textit{Enterococcus faecalis} (2), \textit{Dermobacterium hominis} (1), \textit{Candida albicans} (1).

The sensitivity and specificity of the different media was as follows: nutrient agar 66.6\% (41-87) and 91.7\% (81-97); FAB 50.0\% (26-74) and 96.6\% (88-99); RCM 72.2\% (46-90) and 98.3\% (91-99); and CMBCS 88.2\% (63-98) and 100\% (94-100), respectively.

Conclusions: Our in house method using nutrient broth performed better than FAB and was comparable to RCM. The best results were obtained using the continuous monitoring blood culture system – this should be considered to be the method of choice.
A 95-year-old retired engineer with type-2 diabetes presented with a two year history of worsening right heel pain. He had recently injured his Achilles tendon following a fall. On further questioning, he had joined the army in 1943 and received basic military training in Wales. During this time his feet were almost continuously wet and he had several bouts of athlete’s foot, with one episode resulting in inflammation up to his thigh.

Examination revealed calcaneal tenderness along with tenderness over the distal Achilles tendon. There was no sinus or soft tissue inflammation. Radiographs showed a large lytic lesion (4x3cm) in the posterior aspect of the calcaneum. MRI demonstrated a simple intraosseous abscess with extensive bone marrow oedema. Histology from a fluoroscopic-guided biopsy showed a chronic inflammatory cell infiltrate, predominantly lymphocytes but with neutrophils in one area. Bacterial, fungal and mycobacterial cultures were negative. He was treated empirically with oral co-amoxiclav however developed progressive heel pain and a lateral discharging sinus.

Following MDT discussion, the patient underwent open sampling and partial calcanectomy. Bacterial, fungal and mycobacterial cultures and 16S-rDNA-PCR were negative. Intraoperative histopathology showed an inflammatory cell infiltrate with non-necrotising granulomata. 18S-rDNA-PCR detected *Trichophyton interdigitale* in two separate samples. After discussion with the fungal reference laboratory, he was started on oral itraconazole.

This case demonstrates the benefits of sending multiple samples for PCR in patients with culture-negative osteomyelitis. It reinforces the importance of the multidisciplinary approach, with unusual radiological and histopathological findings prompting further microbiological investigation. Diagnosis: *Trichophyton interdigitale* abscess
Introduction: The optimal choice of antibiotic prophylaxis for Hip (THR) and knee (TKR) replacement is debated but with the recommendation that it is directed by local antibiotic resistance epidemiology. Flucloxacillin 1g IV for 4 doses and gentamicin 5mg/kg stat is currently recommended at North Bristol NHS Trust (NBT). Cephalosporins, used for prophylaxis in many centres, are avoided in the context of historical high rates of C difficle infection. Pathogens causing early surgical site infections (SSI) at NBT were compared to national data and their susceptibility to antibiotic prophylaxis analysed.

Methods: Cases of documented infection which were reported according to national SSI Surveillance Service criteria, for THR and TKR at NBT 2015-2018, were included. Pathogens and susceptibility test results (EUCAST methodology) were confirmed with the microbiology IT system. National benchmarked data was used as a comparison.

Results: 44 NBT patients had early SSI in the 4 years. MSSA and Coagulase negative staphylococci were the predominant pathogens with similar proportions in THR locally and nationally but respectively caused 60% and 33% of NBT TKR infections compared to 40% and 23% nationally. There were no MRSA infections at NBT. 14% of NBT cases cultured ≥1 pathogen which was not susceptible to the prophylactic antibiotics.

Conclusions: Staphylococci remain the predominant infecting organisms. At NBT, for 86% of infected patients organisms were reported as susceptible to prophylactic antibiotics given. This suggests that selecting the optimal antibiotic prophylaxis may be more complex than simply applying local susceptibility results to inform antibiotic choice.
Case report: Managing a distal femoral physeal non-union secondary to neonatal osteomyelitis in an 8 year old

Sanjeev Musuvathy Ravi, Sachindra Nayak Kapadi, Akshath Adapa, Bhalchandra Bhalerao

Wrightington Wigan and Leigh NHS Foundation trust, Wigan
Wrightington Wigan and Leigh NHS Foundation Trust, Wigan
Pennine Acute NHS Trust, Oldham

Treating distal femur non-union secondary to neonatal osteomyelitis can be a challenging task. It includes addressing the growth arrest at the physis by lengthening the femur along with bony union as well as achieving good range of motion at the knee joint. In this case report, our patient with right distal femoral physeal non-union had undergone acute docking of the femur and lengthening of the tibia over a knee-spanning Ilizarov ring fixator. 10 months later fixator was removed and length was achieved. Patient had stiffness of the knee in extension with further flexion of 0-20 degrees which persisted after intensive physiotherapy. Judet’s Quadriceps-plasty was performed. Post operatively, limb was immobilised in 120 degrees flexion. Post op day 5, flexion slab was removed, physiotherapy with CPM for 4 weeks was given, active knee flexion of 85 degrees was achieved. Judet’s quadriceps-plasty in cases of post limb lengthening using an Ilizarov fixator has not been well reported. We achieved reasonably good knee range of motion in our patient. This two-stage management is a good option to treat such cases.

Abstract without diagnosis

Treating distal femur non-union secondary to neonatal pathology can be a challenging task. It includes addressing the growth arrest at the physis by lengthening the femur along with bony union as well as achieving good range of motion at the knee joint. In this case report, our patient with right distal femoral physeal non-union had undergone acute docking of the femur and lengthening of the tibia over a knee-spanning Ilizarov ring fixator. 10 months later fixator was removed and length was achieved. Patient had stiffness of the knee in extension with further flexion of 0-20 degrees which persisted after intensive physiotherapy. Judet’s Quadriceps-plasty was performed. Post operatively, limb was immobilised in 120 degrees flexion. Post op day 5, flexion slab was removed, physiotherapy with CPM for 4 weeks was given, active knee flexion of 85 degrees was achieved. Judet’s quadriceps-plasty in cases of post limb lengthening using an Ilizarov fixator has not been well reported. We achieved reasonably good knee range of motion in our patient. This two-stage management is a good option to treat such cases.
A 68-year-old man initially presents with shortness of breath, lethargy and pancytopenia. He is subsequently diagnosed with acute monoblastic and monocytic leukaemia from a bone marrow aspirate and trephine biopsy and is given intensive chemotherapy (daunorubicin and cytarabine) with antifungal posaconazole prophylaxis. He was initiated on antibiotics to treat neutropenic sepsis, but respiratory symptoms persisted.

Chest radiograph demonstrated an opacity in the right upper lung lobe. CT imaging revealed an expanding mass in the right upper lobe with an ‘air-crescent’ sign. The patient was commenced on empirical liposomal amphotericin. Bronchio-alveolar lavage cultures were sent for 18S ribotyping and Rhizopus was detected. Ultrasound guided aspirates grew Aspergillus sp. Despite antifungal therapy, the mass continued to grow in size. A repeat CT scan demonstrated that the mass had invaded the second anterior rib causing a fracture. An additional antifungal isavuconaole was added.

The patient was transferred to a tertiary referral cardiothoracic centre where he underwent a lobectomy and rib resection. Histology confirmed a large fungal ball demonstrating fungal elements suggestive of Aspergillus species) which had invaded a 78mm section of rib as well as the right upper lobe. The patient remains on systemic antifungal therapy.

This case demonstrates that fungal infections can cause destructive osteomyelitis despite intensive medical therapy and can require complex multidisciplinary management.

**Abstract without diagnosis**

A 68-year-old man presents with shortness of breath and lethargy and is found to be pancytopenic. He is subsequently diagnosed with acute monoblastic and monocytic leukaemia and is given intensive chemotherapy (daunorubicin and cytarabine) with antifungal posaconazole prophylaxis. The patient became septic and was found to have a large mass in the right upper lobe of unknown aetiology.

CT scans demonstrated an expanding mass in the right upper lobe with an ‘air-crescent’ sign. He underwent bronchio-alveolar lavage and ultrasound guided aspirates. The patient was commenced on high dose treatment. Despite this, the mass continued to grow in size. A repeat CT scan demonstrated that the mass had invaded the second anterior rib and caused a fracture.

The patient was transferred to a tertiary referral cardiothoracic centre where he underwent a lobectomy and rib resection. Histology confirmed the diagnosis which has invaded a 78mm section of rib as well as the right upper lobe despite intensive medical therapy. The patient remains on treatment.
Abstract

We present an unusual cause of native vertebral osteomyelitis in a 66 year old female patient with a history of T2DM. She presented with a 1 month history of back pain, fever and an elevated C-reactive protein (102 mg/L). Three weeks prior to admission she had returned from a two month trip to India and Pakistan. She denied any history of night sweats, cough or any TB contacts. MRI imaging revealed T8-9 vertebral osteomyelitis. Multiple blood cultures were sent and were negative. On Day 14 of her admission she underwent a CT-guided biopsy and samples were sent for bacterial and mycobacterial culture. Biopsy culture yielded no growth and a 16s PCR was negative. She was empirically treated with teicoplanin, and ciprofloxacin added later after she failed to improve. Repeat MRI on day 20 showed disease progression. She then developed leukopenia secondary to the teicoplanin and so antibiotics were stopped on day 23. Three days later she had a mildly elevated β-D-glucan and a positive Aspergillus antibody. A second spinal biopsy was performed on day 31 and samples were sent for bacterial, mycobacterial and fungal culture. Empirical daptomycin and ciprofloxacin was commenced afterwards. Fungal cultures grew *Aspergillus terreus* and the patient was commenced on voriconazole.

This case highlights the benefits of performing a second spinal biopsy in cases where the initial biopsy is negative and patients fail to respond to empirical antibacterial therapy. Furthermore, a fungal aetiology should be considered irrespective of immune status, particularly in patients with diabetes.

Abstract without diagnosis

We present an unusual cause of native vertebral osteomyelitis in a 66 year old female patient with a history of T2DM. She presented with a 1 month history of back pain, fever and an elevated C-reactive protein (102 mg/L). Three weeks prior to admission she had returned from a two month trip to India and Pakistan. She denied any history of night sweats, cough or any TB contacts. MRI imaging revealed T8-9 vertebral osteomyelitis. Multiple blood cultures were sent and were negative. On Day 14 of her admission she underwent a CT-guided biopsy and samples were sent for bacterial and mycobacterial culture. Biopsy culture yielded no growth and a 16s PCR was negative. She was empirically treated with teicoplanin, and ciprofloxacin added later after she failed to improve. Repeat MRI on day 20 showed disease progression. She then developed leukopenia secondary to the teicoplanin and so antibiotics were stopped on day 23. Three days later she had a mildly elevated β-D-glucan and a positive Aspergillus antibody. A second spinal biopsy was performed on day 31 and samples were sent for bacterial, mycobacterial and fungal culture. Empirical daptomycin and ciprofloxacin was commenced afterwards.

Diagnosis was made based on the findings of the second biopsy culture.

This case highlights the benefits of performing a second spinal biopsy in cases where the initial biopsy is negative and patients fail to respond to empirical antibacterial therapy.
Title  Tuberculous dactylitis (Spina Ventosa) of proximal phalanx in a 10-year-old girl– a case report

Authors  Akshath Adapa¹,², Apoorv Kumar³, Sanjeev Musuvathy Ravi⁴, Sachindra Nayak Kapadi⁴

Addresses  ¹Royal Oldham Hospital, Oldham, United Kingdom. ² Manipal Hospitals, Bengaluru, India. ⁴Wrightington Wigan Leigh NHS foundation trust, Wrightington

Abstract

Tubercular dactylitis, defined as Tubercular osteomyelitis of the short tubular bones of the hand and feet is an uncommon condition seen predominantly in children. The condition is characterised by cystic expansion of the bone due to filling up of the medullary canal with granulation tissue and pus and thinning of the overlying cortex, a condition radiologically termed as ‘spina ventosa’. We report a case of a 10-year-old girl who presented with a painful, slowly progressive swelling of two months’ duration in the index finger of right hand, without any associated history of trauma. The plain radiographs of the hand showed extensive destruction of the proximal phalanx of index finger with thinning of the overlying cortex. Magnetic Resonance Imaging (MRI) showed diffuse enlargement and focal cortical break in the proximal phalanx with thick organised fluid in the medullary canal with a small area of cortical breech. The finger was debrided and the digit stabilised by a K-wire which was removed at three weeks. Biopsy of the debrided material confirmed the clinical diagnosis of Tubercular osteomyelitis. The child was started on anti-tubercular drugs with aggressive mobilisation of the finger at three weeks. At one-year follow-up, the lesion had healed well with functional range of movements of the right index finger.

Keywords: Tuberculosis dactylitis, spina ventosa, tuberculous granuloma.

Abstract without diagnosis

The condition is characterised by cystic expansion of the bone due to filling up of the medullary canal with granulation tissue and pus and thinning of the overlying cortex.

We report a case of a 10-year-old girl who presented with a painful, slowly progressive swelling of two months’ duration in the index finger of right hand, without any associated history of trauma. The plain radiographs of the hand showed extensive destruction of the proximal phalanx of index finger with thinning of the overlying cortex. Magnetic Resonance Imaging (MRI) showed diffuse enlargement and focal cortical break in the proximal phalanx with thick organised fluid in the medullary canal with a small area of cortical breech.
An In-Vitro assessment of the bioactive profile of antifungal-loaded Calcium Sulfate beads

Mark Butcher¹, Craig Delury², Gordon Ramage¹

¹University of Glasgow, Glasgow, United Kingdom. ²Biocomposites, Keele

Abstract

Introduction: The management of fungal osteomyelitis is challenging. The use of antibiotic loaded, fully absorbable calcium sulfate beads with antibiotics for local release has been well documented, but despite growing concerns about difficulty treating fungal infections, little data has been published. Here we developed an in-vitro model where Calcium Sulfate (CS*) beads were mixed with amphotericin B, caspofungin, and fluconazole, to investigate their efficacy when introduced to clinically relevant fungi.

Methods: A panel of fungi were selected for preliminary Minimum Inhibitory Concentration (MIC) testing. After establishing planktonic MICs, antifungal CS beads were introduced to fungal biofilms to assess biofilm formation and cell viability, through a combination of Crystal Violet and XTT assays. Inoculation of a hydrogel substrate, packed with antifungal CS beads, was used to assess diffusion through a semi-dry material, to mimic active infection in-vitro. This was assessed via colony counts, Q-PCR, light microscopy and electron microscopy.

Results: Established MICs remained consistent over 7-days, indicating controlled release of each antifungal. Amphotericin B and caspofungin reduced biomass and inhibited cell metabolism, whilst CS beads containing fluconazole displayed a fungistatic effect. SEM images confirm these findings. A similar trend followed in assessment of hydrogels, with a reduction in CFU when comparing CS beads loaded with caspofungin and amphotericin B.

Conclusion: Our results have shown that antifungal loaded CS beads produce a sustained antimicrobial effect over 7 days, which inhibits clinically relevant fungal species in-vitro.

*Stimulan Rapid Cure, Biocomposites.
Why toothpicks are bad for you?

Saba Qaiser, Rajesh Sofat, Eleni Mavrogiorgou

East and North Hertfordshire NHS Trust, Stevenage

Abstract

Background: *Fusobacterium nucleatum* is an anaerobic oral commensal and a periodontal pathogen associated with a wide spectrum of human diseases most notably in periodontal diseases, intrauterine infection, appendicitis, inflammatory bowel disease, and liver abscess. Bone and soft tissue infections with this organism although rare have been reported in literature. We report an interesting case of *F nucleatum* infection in a previously healthy woman.

Materials/methods: We report a case of a 40 year old female, presenting to the Accident and Emergency department 2 months after treatment for left ankle cellulitis with medial malleolus pain, tenderness and fever. On initial presentation she had stepped into a used toothpick which was removed from the plantar aspect of the foot and received intravenous Teicoplanin. MRI ankle showed extensive hindfoot soft tissue inflammation with a small abscess and gas locules. She underwent aspiration of the ankle joint, incision of the posteromedial malleolus abscess and drainage with excision of the sinus tract edges. She was started on intravenous ertapenem via OPAT.

Results: Tissue samples taken from the ankle were sent for microscopy and culture both of which were negative. Subsequently those samples were sent to the reference laboratory for 16s, Mycobacterium Tuberculosis and atypical mycobacteria PCRs. Mycobacteria PCRs were negative but 16s PCR detected *Fusobacterium nucleatum*. Based on this result her treatment was changed to ceftriaxone and metronidazole and she had a full recovery after 6 weeks antibiotics.

Conclusions: This report highlights the importance of good history taking and keeping low threshold to suspect unusual bacterial infection.

Abstract without diagnosis

We report a case of a 40 year old female, presenting to the Accident and Emergency department 2 months after treatment for left ankle cellulitis with medial malleolus pain, tenderness and fever. On initial presentation she had stepped into a used toothpick which was removed from the plantar aspect of the foot and received intravenous Teicoplanin. MRI ankle showed extensive hindfoot soft tissue inflammation with a small abscess and gas locules. She underwent aspiration of the ankle joint, incision of the posteromedial malleolus abscess and drainage with excision of the sinus tract edges. She was started on intravenous ertapenem via OPAT. 16S PCR of the sample detected an unusual organism.
Retrospective audit to establish the usefulness of 99M Tc SPECT-CT in the diagnosis of bone infection in a Regional Bone Infection Service/Limb reconstruction unit

Dr S. Balamoody, Mr O. Uhiara, Dr R Gadvi, Miss D Bose

Abstract

Introduction: Diagnosis of bone infection is clinically and radiologically challenging in patients who have had:

- Previous orthopaedic trauma/polytrauma
- Previous orthopaedic surgery
- Metalwork of various forms.

MR imaging is not always suitable in these patients and interpretation difficult in the setting of trauma/surgical intervention.

Methods: Total number of orthopaedic bone triple phase SPECT-CT cases from start of SPECT-CT service in 2011 to November 2014 excluding Neuro/spine and ENT cases. Clinical and imaging data collected by an orthopaedic SpR and Consultant Radiologist respectively who were blinded to each other’s data. All SPECT-CT scans reviewed and scored for likelihood of infection. Those who had also undergone MRI imaging had further MR scoring for infection. A similar clinical score was also obtained based on retrospective review of clinic letters. Operation notes, results of radiological bone biopsy, microbiology and histology results and clinical outcome were also used to form the clinical score where available. Sensitivity and specificity for SPECT-CT and MRI were obtained.

Results: 54 patients were analysed (57 SPECT-CTs), 44 of these had metalwork in situ. 19 patients had also undergone MRI. 4 patients had undergone image guided biopsy. 30 patients underwent surgery of which 20 of these had microbiology results available. Sensitivity for SPECT-CT (n=57) was 82% with specificity 94%. MRI (n=18) had a sensitivity of 44% and specificity of 50%.

Conclusion: Triple phase SPECT-CT has a very high specificity and high sensitivity for bone infection in these selected complex patients.